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I, JANENE PEISKER, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2004900872 for a patent by SINGAPORE AIRLINES LIMITED as filed on 20 February 2004.



WITNESS my hand this
Fourth day of April 2005

A handwritten signature in black ink, appearing to read 'J. R. + C.'.

JANENE PEISKER
TEAM LEADER EXAMINATION
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AUSTRALIA

Patents Act 1990

PROVISIONAL SPECIFICATION

Applicants:

SINGAPORE AIRLINES LIMITED

Invention Title:

AN AIRCRAFT CABIN

The invention is described in the following statement:

AN AIRCRAFT CABIN

The present invention relates to an aircraft cabin.

5

In general terms, the invention comprises an aircraft cabin that comprises a plurality of "private" passenger compartments for passengers during an aircraft flight, with each compartment comprising side walls that
10 define a compartment space and being accessible via a doorway in one of the side walls, and each compartment at least comprising a chair for a passenger.

Preferably the cabin comprises a section of a
15 total aircraft cabin.

In one, although not the only possible, embodiment the cabin comprises 3 rows of compartments in a length-wise extending direction of the aircraft, with: (a)
20 two outer rows being positioned along opposite sides of the aircraft and the aircraft side walls forming compartment side walls, and (b) a central row being positioned between and separated from the outer rows by length-wise extending aisles.

25

Preferably the positions of the compartments are staggered so that the doorways of the compartments on opposite sides of the aisles are not aligned.

30

In general terms, the invention also comprises a private passenger compartment for a passenger during an aircraft flight that comprises side walls that define a compartment space and a doorway in one of the side walls that enables access to the compartment, and a chair and
35 other basic components located in the compartment space in an interactive way so that the components can be selectively arranged in a number of different

configurations.

Preferably the other basic components of the compartment comprise any one or more of a work desk, a table assembly, a seat, a bed, and a visual display screen of an entertainment system.

Preferably the configurations comprise relaxation, work, entertainment, and sleep configurations.

There are a large number of possible interactive combinations of the basic components within the compartment.

In one embodiment the compartment comprises the following interactive combination of components in the compartment space: (a) the chair in one corner of the compartment space, (b) the work desk along at least a part of one side wall of the compartment and proximate the chair, (c) the table assembly movable between a storage position adjacent one side wall of the compartment and an operative position with a table of the table assembly extending horizontally proximate the chair.

Preferably the compartment comprises the bed movable between a raised storage position and a lowered operative position on the work desk.

Preferably the compartment comprises the seat adjacent at least a part of one side wall of the compartment.

Preferably the work desk and the seat are positioned adjacent different side walls of the compartment.

In another embodiment the compartment comprises

the following interactive combination of components in the compartment space: (a) the chair in one corner of the compartment space, (b) the seat adjacent at least a part of one side wall of the compartment, (c) the table assembly movable between a storage position adjacent one side wall of the compartment and an operative position with a table of the table assembly extending horizontally proximate the chair.

10 In another embodiment the compartment comprises the following interactive combination of components in the compartment space: (a) the chair in one corner of the compartment space, (b) the bed movable between a raised storage position and a lowered operative position, (c) the table assembly movable between a storage position adjacent one side wall of the compartment and an operative position with a table of the table assembly extending horizontally proximate the chair.

20 In another, although not the only other, embodiment the compartment comprises the following interactive combination of components in the compartment space: (a) the chair in one corner, (b) the seat along at least a part of the side wall opposite the chair when the chair is in a take-off position, (c) the work desk along at least a part of the side wall that is in a lengthwise-extending direction of the aircraft, (d) the table assembly movable between a storage position adjacent the same side wall as the work desk and an operative position with a table of the table assembly extending horizontally in a space between the chair and the seat, and (e) the bed movable between a raised storage position and a lowered operative position on the work desk.

35 The term "take-off" position is understood herein to mean a position in which a person seated in the chair is facing forward in the direction of travel of the

aircraft.

5. Preferably the work desk and the table assembly are located adjacent the side wall that is opposite the side wall that defines the doorway.

10. Preferably the work desk defines a support platform for the bed and supports the bed when the bed is in the lowered position.

15. Preferably the bed is stored in a raised position in the compartment space and is moveable down to a lowered operative position on the platform and is supported by the platform in the lowered position.

20. Preferably the work desk and the table assembly are positioned in relation to the chair when the table assembly is in the operative position so that the chair can be swiveled between positions facing the work desk and the table assembly.

25. Preferably a work platform of the work desk is vertically adjustable to accommodate different requirements of different passengers. This feature makes it possible to design the passenger seat to be with a fixed vertical position.

30. Preferably the storage position of the table assembly is adjacent the work desk.

In an alternative, although not the only possible alternative embodiment, the storage position of the table assembly is within the space occupied by the work desk.

35. Preferably the table assembly comprises: (a) a base member that can slide between the storage position adjacent the side wall and the operative position between

the chair and the seat, (b) a support arm pivotally mounted to the base member and foldable between the storage position and the operative position, and (c) a table pivotally mounted to the support arm.

5

The above-described table assembly can be moved from the storage position to the operative position by sliding or otherwise moving the base member outwardly from the storage position, lifting the table upwardly and inwardly into the compartment space and thereby pivoting the support arm upwardly and inwardly into the compartment space until the table is in the horizontal operative position.

15

Preferably the support arm includes a table support element that is positioned to support an underside of the table when the table assembly is the operative position with the table in the horizontal position.

20

Preferably the table includes side wings that can be folded between an inward storage position and an outward operative position.

25

Preferably the base member defines a storage compartment. By way of example, the storage compartment may be used for storing a brief case, etc.

30

In general terms, the present invention also comprises the above-described table assembly.

Preferably the compartment includes a sliding door assembly for closing the doorway.

35

Preferably the sliding door assembly comprises an upper rail and a curtain supported by the rail.

Preferably the rail is mounted for sliding

movement between a retracted position in which the rail is located in the side wall on one side of the doorway and an operative, ie closed, position in which the rail extends across the doorway.

5

Preferably the curtain is adapted to fold in a concertina fashion so that (a) the curtain folds against the side wall when the rail is slid into the retracted position and (b) the curtain expands and closes the doorway when the rail is in the operative position.

10

Preferably the sliding door assembly comprises a member on the side of the doorway that is adapted to retain the rail in the operative position.

15

In general terms, the present invention also comprises the above-described sliding door assembly.

In general terms the present invention also comprises an aircraft that comprises the above-described cabin.

20

The present invention is described further by way of example with reference to the accompanying drawings of which:

25

Figure 1 is a schematic diagram that illustrates one embodiment of a cabin in accordance with the present invention;

30

Figure 2 is a detailed view of part of the cabin shown in Figure 1 viewed in a different direction to that of Figure 1;

35

Figure 3 is a further detailed view of another part of the cabin shown in Figure 1 viewed in a different direction to that of Figures 1 and 2;

Figure 4 is a top perspective view of an embodiment of a private passenger compartment in accordance with the present invention in one compartment configuration;

Figure 5 is another top perspective view of the private passenger compartment shown in Figure 4 in another compartment configuration;

Figure 6 is a side view of the private passenger compartment shown in Figures 4 and 5 viewed from within the aircraft cabin;

Figure 7 is a side view of the private passenger compartment shown in Figures 4 and 5 viewed from outside the cabin compartment;

Figure 8 is a perspective view of the table of the private passenger compartment shown in Figures 4 to 7 in an operative position;

Figures 9 to 20 are a series of perspective views of the private compartment shown in Figures 4 to 7 that illustrate a sequence of operations to transform the private passenger compartment into different configurations.

The figures illustrate an aircraft cabin 3 that forms part of a total cabin layout of the aircraft.

The cabin 3 comprises a plurality of "private" passenger compartments 5 that define compartment spaces for passengers.

The compartments are designed particularly for long-haul flights during which the passengers occupying the

compartments may wish to work, entertain, relax by watching videos or playing computer games, or sleep.

Each compartment 5 is defined by side walls 7 and is accessible via a doorway 9 in one of the side walls 7.

The cabin comprises 3 rows 11a, 11b, 11c of compartments 5 arranged in a length-wise extending direction of the aircraft.

10

The two outer rows 11a, 11c are positioned along opposite sides of the aircraft with the aircraft side walls 15 forming compartment side walls.

15 The central row 11b is positioned between and is separated from the outer rows by length-wise extending aisles.

The positions of the compartments 5 are staggered so that the doorways 9 of the compartments 5 on opposite sides of the aisles do not directly face each other. This feature enhances the privacy of the compartments.

25 The internal side walls 7 that comprise the doorways 9 are formed as louvered walls so that the passenger occupants can selectively create an open compartment which facilitates visual interaction with other compartments in the cabin or a more private closed compartment.

30

Each compartment 5 comprises a sliding door assembly for closing the doorway 9.

35 The sliding door assembly comprises an upper rail 51 and a curtain 55 supported by the rail.

The rail 51 is mounted for sliding movement

between a retracted position in which the rail is located in the side wall 7 on one side of the doorway 9 and an operative, ie closed, position in which the rail 51 extends across and blocks the doorway 9.

5

The curtain 55 is arranged to fold in a concertina fashion. Accordingly, the curtain 55 folds against the side wall 7 when the rail 51 is slid into the retracted position and the curtain 55 expands and closes the doorway 9 when the rail 51 is in the operative position.

The sliding door assembly also comprises a member (not shown) on the opposite side of the doorway 9 that is adapted to retain the rail in the operative position.

15

Each private passenger compartment 5 houses basic functional components required by passengers, particularly on long-haul flights.

20

The components comprise a chair 21, a work desk 23, a table assembly 25, and a seat 27 located within the compartment space.

25

The components are designed and arranged to be interactive with each other so that the components can be selectively arranged in a number of different functional configurations as may be required by passengers, particularly on long-haul flights.

30

More specifically, the components are designed and arranged to be movable between a range of positions to re-configure the compartment space.

35

The configurations comprise relaxation, work, entertainment, and sleep configurations.

More specifically, the private compartment comprises the following combination of components: (a) a chair 21 in one corner of the compartment, (b) a bench seat 27 along a side wall opposite the chair when the chair is in a take-off position and facing in a forward travel direction of the aircraft, (c) a work desk 23 along at least a part of a side wall that is in a lengthwise-extending direction of the aircraft, (d) a table assembly 25 movable between a storage position against the same side wall as the work desk 23 and an operative position with a table of the table assembly 25 extending horizontally in a space between the chair 21 and the seat 27, and (e) a bed 29 movable between a raised storage position and a lowered operative position on the work desk.

The chair 21 is arranged so that it can swivel between a range of positions. For example, the chair 21 can be positioned in an aircraft take-off position so that a person in the chair faces a forward travel direction of the aircraft, as shown in Figures 2, 5, and 6. In addition, the chair 21 can be positioned so that the person faces the work desk 25, as shown in Figure 3 (the rearward compartment shown in the figure).

The chair 21 is an adjustable chair, with a chair back, seat and foot-rest that can be placed in a range of positions to meet passenger requirements. The chair may be of a conventional construction.

Figure 8 shows the table assembly 25 in an operative position.

With reference particularly to Figure 8, the table assembly 25 comprises a table 33 that has a central panel and two side wings 35 that can be folded onto the central panel.

The table assembly 25 also comprises a base member 41 that, when mounted in a compartment, is supported for sliding movement between the storage position adjacent the compartment side wall and the operative position between the chair 21 and the seat 27. The base member 41 is in the form of a straight-sided rectangular cabinet that defines a storage compartment. The base member 41 is supported for sliding movement in a compartment by a track assembly, identified in part by the rail 43 mounted to and extending rearwardly from the base member.

The table assembly 25 also comprises a support arm 37 that interconnects the table 33 and the base member 41 and facilitates moving the table 33 from the storage position to the operative position.

The support arm 37 is pivotally mounted at a lower end to a forward part of an upper section of the base member 41.

The support arm 37 is also pivotally mounted at an upper end to an underside of the table 33. The support arm 37 is foldable between a storage position in which the support arm 37 (and the table 33) lies flat on top of the base member 41 and an operative position in which the support arm 37 is angled forwardly (as shown in Figures 8 and 10).

The support arm 37 is coupled to the base member 41 so that it can not pivot forward beyond the operative position shown in Figures 8 and 10.

The support arm 37 comprises a V-shaped channel member 45 near the upper end thereof which acts as a support element for the table 33 and supports an underside

of the table 33 when the table assembly is in the operative position with the table 33 in the horizontal position.

5 The above-described table assembly 25 can be moved from the storage position to the operative position by sliding the base member 41 outwardly from the storage position, lifting the table 33 upwardly and inwardly into the compartment space and thereby pivoting the support arm
10 37 upwardly and inwardly into the compartment space until the table 33 is in the horizontal operative position.

As is indicated above, the compartment is multi-functional and the basic components can be positioned in a
15 range of configurations. This feature is illustrated, by way of example, in Figures 9 to 20.

Figure 9 illustrates one configuration of the private passenger compartment 5. In this configuration
20 the table assembly 25 is in the operative position in which the table 33 of the table assembly 25 is in an unfolded position in a space between the chair 21 and the seat 27. In this configuration the compartment is multi-functional and can be used for a range of purposes. For
25 example, the table assembly 25 can be used as a meals table for supporting one or more meals delivered to the compartment to be eaten by the single passenger occupant of the compartment or the passenger and a "visiting" passenger. Alternatively, the table assembly 25 can be
30 used as a work desk by the single passenger or the passenger and a "visiting" passenger.

Figure 10 illustrates a first step to transform the compartment from the configuration shown in Figure 9
35 to an alternative configuration.

In the first step shown in Figure 10 the wings 35

of the table 33 are folded inwardly onto the central panel of the table 33.

5 With reference to Figures 11 and 12, in a second step the table 33 is lifted upwardly and outwardly (in relation to the interior of the compartment space) toward the aircraft side wall 15 to pivot the table 33 and the support arm 37 into the folded position shown in Figure 12 in which the table 33 and the support arm 37 overlies and are supported by the base member 41.

15 Thereafter, the base member 41 of the table assembly 25 is slid from the operative position shown in Figure 12, in which the base member extends into the space between the chair 23 and the seat 27, and the storage position shown in Figure 13, in which the base member 41 is located against the aircraft side wall 15.

20 The final step in the transformation sequence involves sliding a cover member 61 over the stored table assembly 25 to provide a flat working surface.

25 In the configuration shown in Figure 14 the compartment is multi-functional. By way of example, the single passenger occupant may be seated in the chair 23 or on the seat 27 and relax or work, as required. When seated on the chair 23 the passenger may conveniently view the visual display screen 45.

30 Figure 15 illustrates an intermediate position of the bed 29 in a first step to transform the configuration shown in Figure 14 to a "sleeping" configuration.

35 This step comprises lowering the bed 29 from the raised position shown in Figure 14 to the lowered position shown in Figure 16.

Figure 16 illustrates the bed 29 supported by the work desk 23 in the lowered position of the bed.

5 Figure 17 illustrates the compartment in the sleeping configuration with a person on the bed 29 and the visual display screen 45 pivoted to a position in which the person on the bed can view the screen while in a reclining position.

10 Figure 18 illustrates a first step to transform the compartment from the "sleeping" configuration shown in Figure 17 to a "working" configuration.

15 The first step involves swiveling the chair 23 from the forward position shown in Figure 17 to a working position shown in Figure 18 in which a person seated in the chair is facing towards the aircraft side wall 15.

20 Figure 19 illustrates a subsequent step of raising the bed 29 from the lowered position to the raised position shown in the figure. This step enables access to the work desk 23.

25 The work desk 23 is vertically adjustable so that a person seated in the chair 23 can adjust the height as required to suit personal preferences.

30 Figure 19 illustrates the work desk in one raised position and Figure 20 illustrates the work desk in a lowered position.

35 It is evident from the above that the passenger compartment shown in the figures is multi-functional and can be readily transformed into a number of different configurations that provide a passenger occupying the compartment and visiting passengers with a range of opportunities for work and relaxation.

Many modifications may be made to the embodiments of the cabin and the private passenger compartment described above with departing from the spirit and scope of the invention.

By way of example, whilst the embodiment of the compartment 5 comprises the chair 21, the work desk 23, the table assembly 25, the bench 27, the bed 29, and the interactive display screen 45, the invention is not confined to this interactive combination of components and extends to any combination of components that comprises the chair 21 and one or more of the other basic components.

15

In addition, whilst the embodiment of the cabin comprises 3 rows of private passenger compartments separated by aisles, the invention is not so limited and extends to any suitable arrangement of the compartments.

Perspective

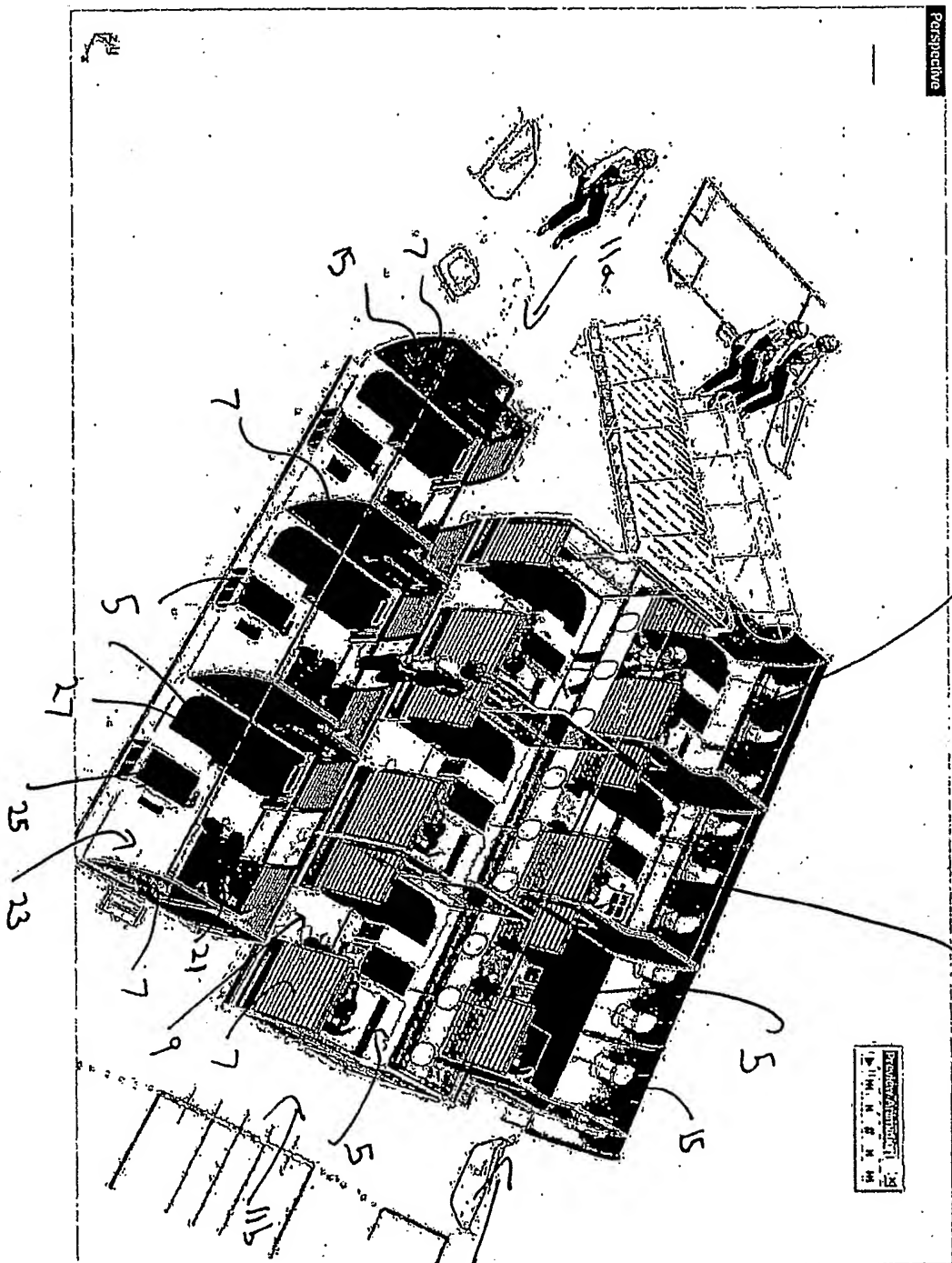


FIGURE 1

11c

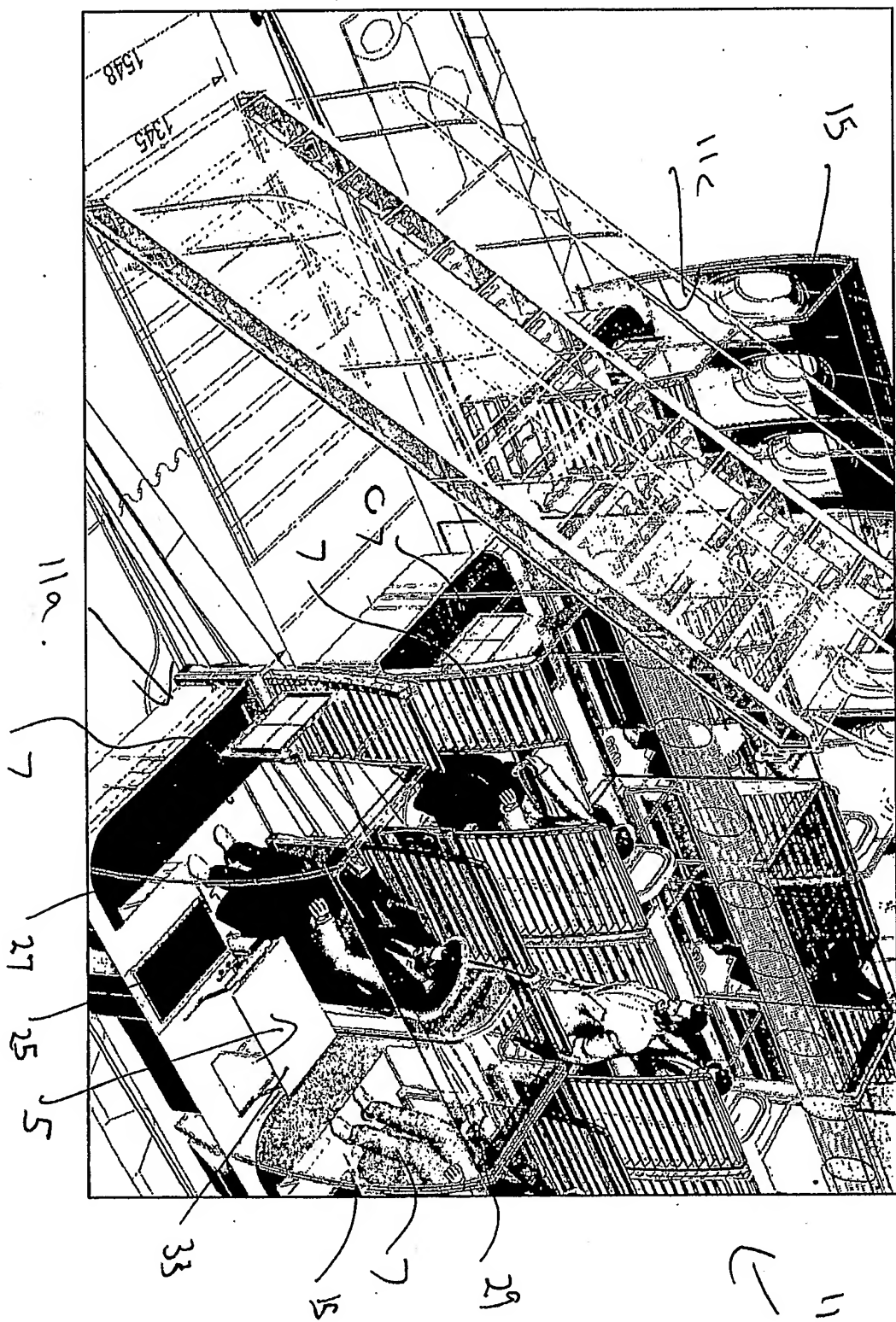


FIGURE 2

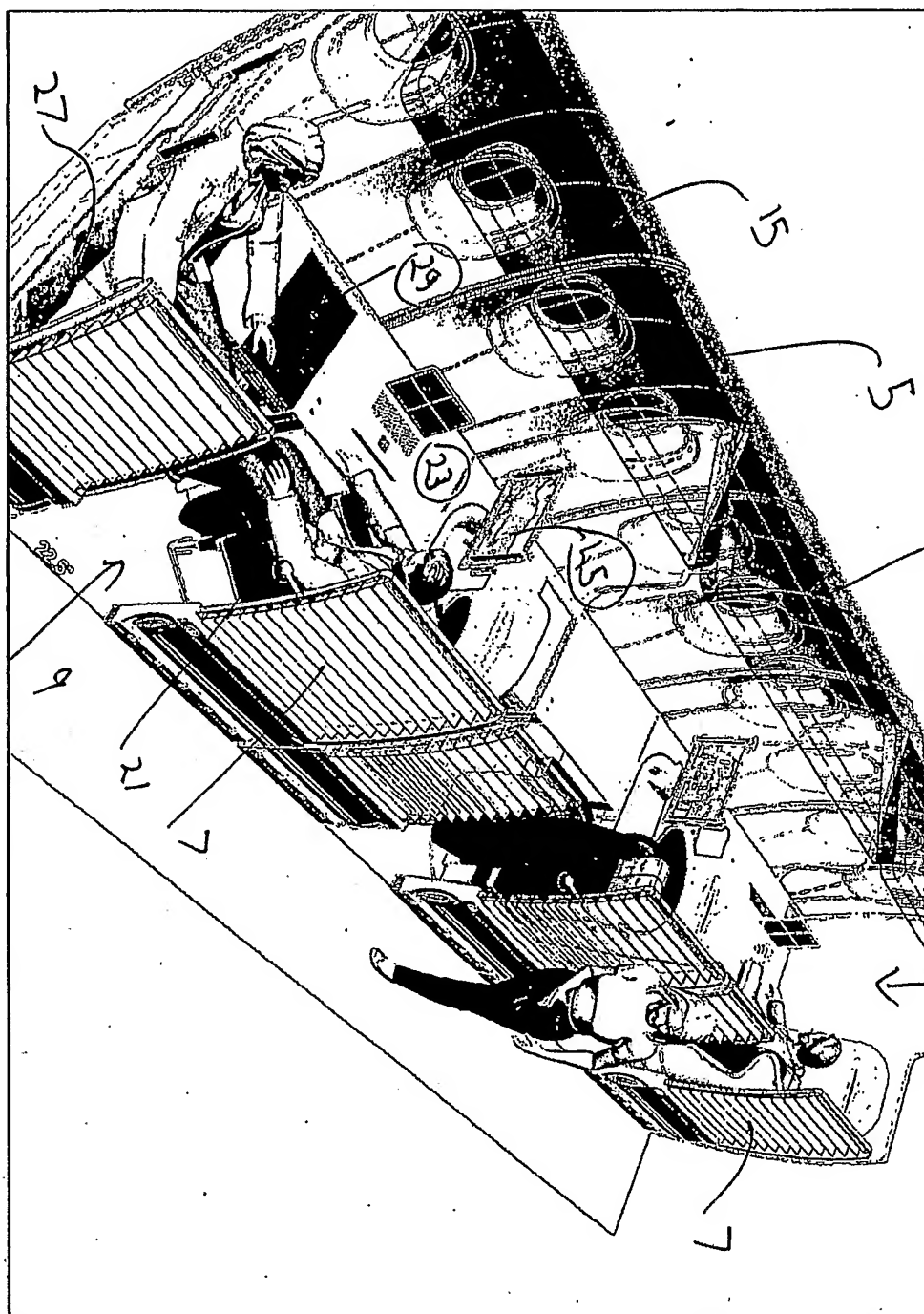


FIGURE 3

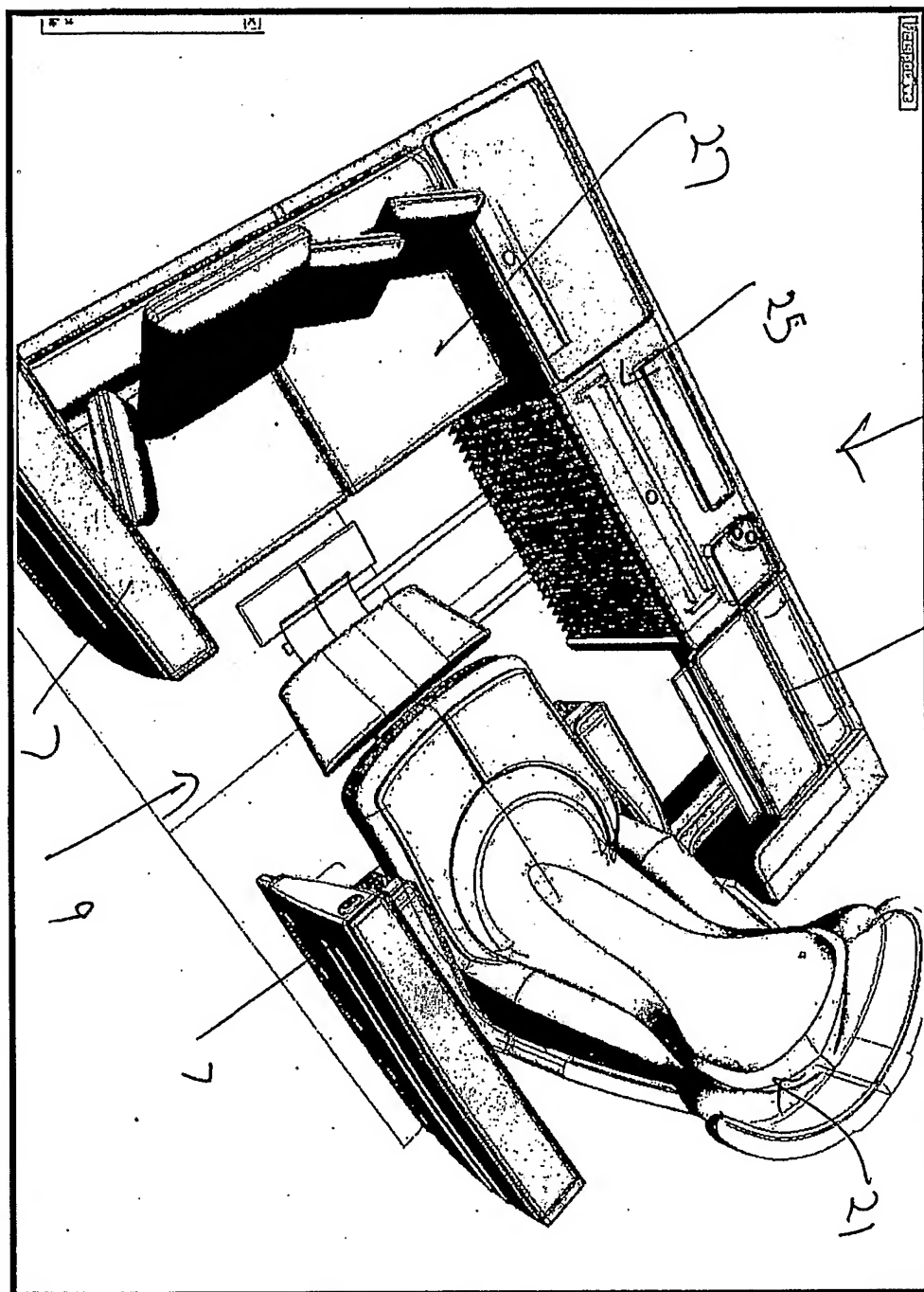


FIGURE 4

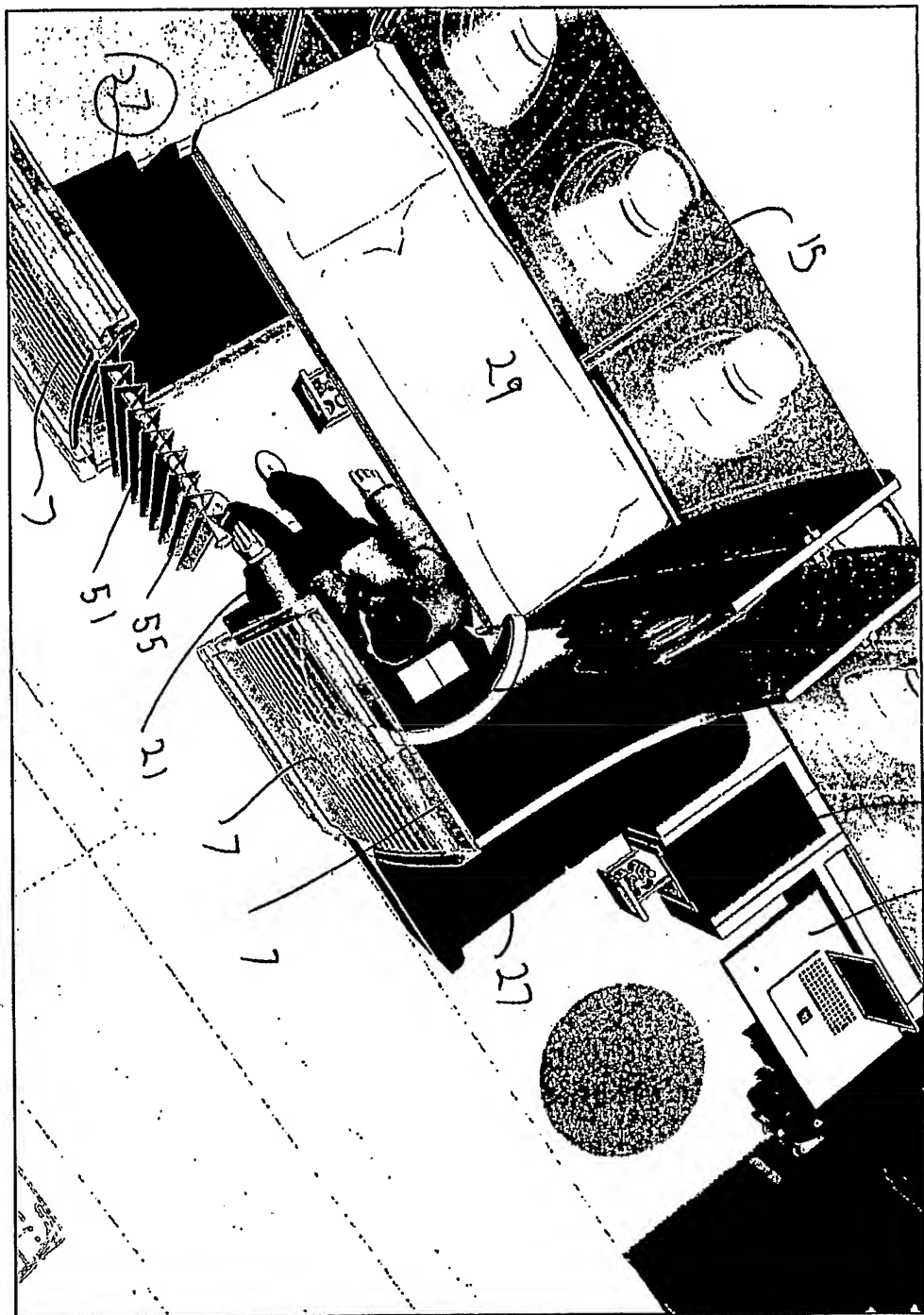


FIGURE 5

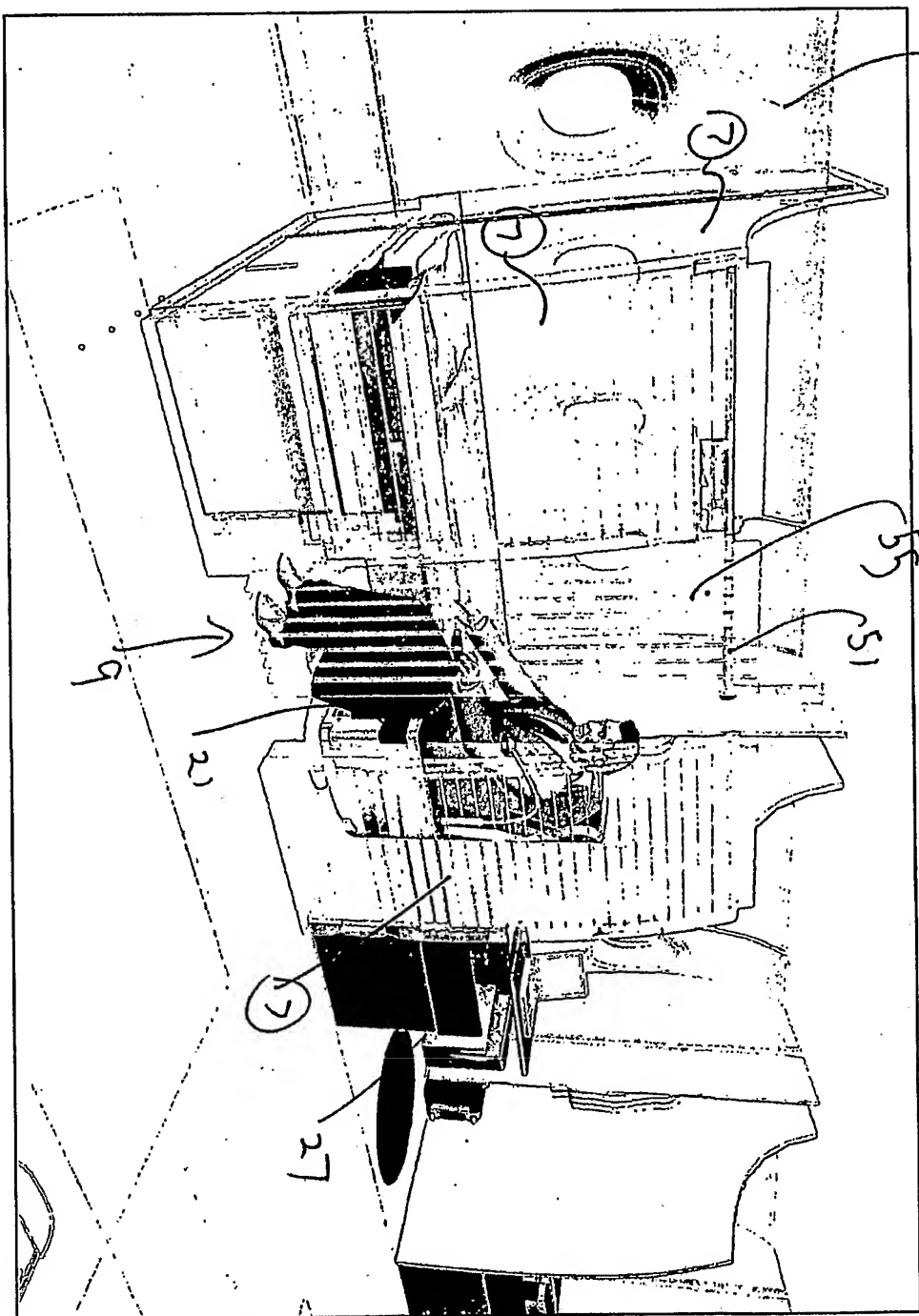


FIGURE 7

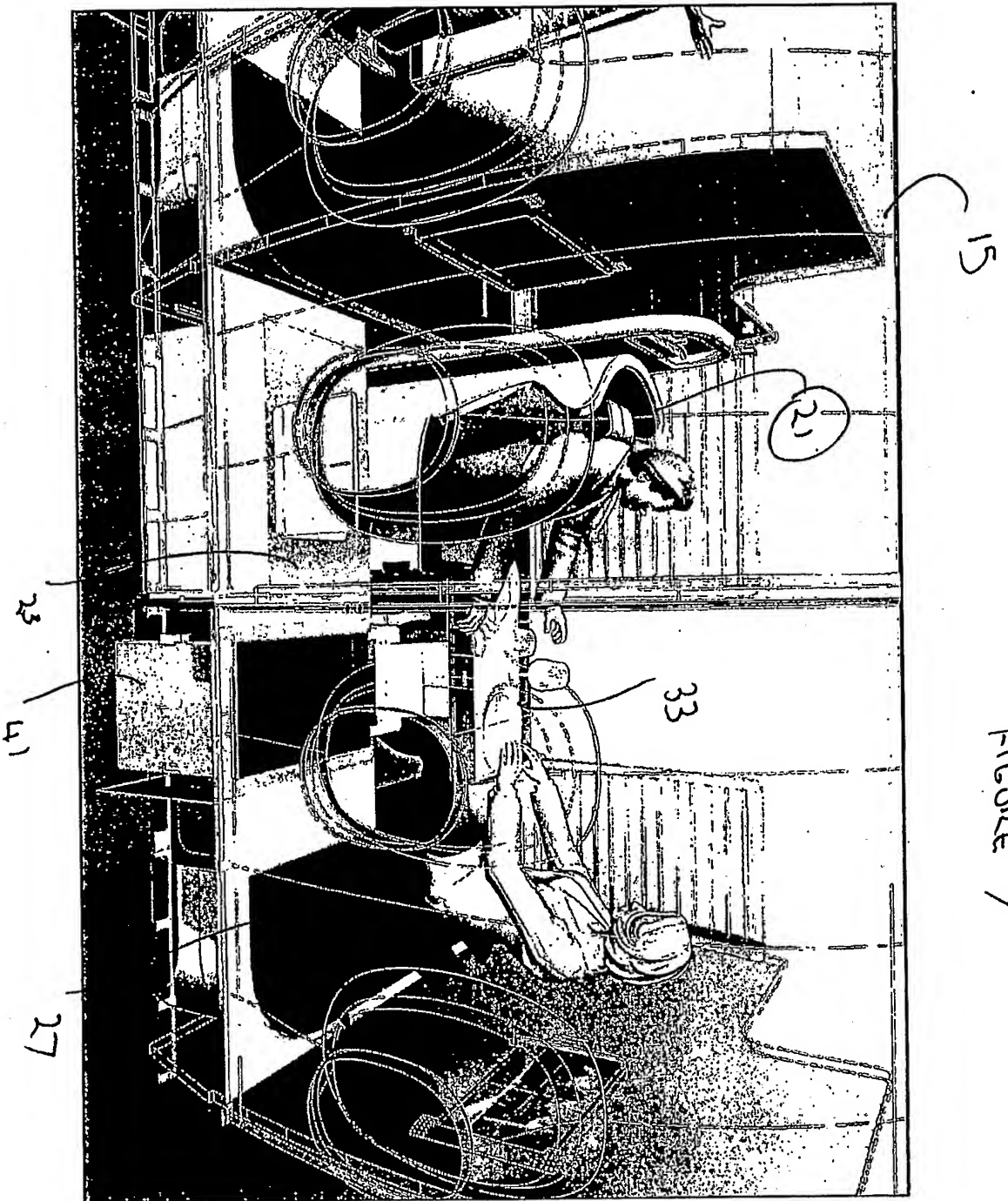


Figure 8

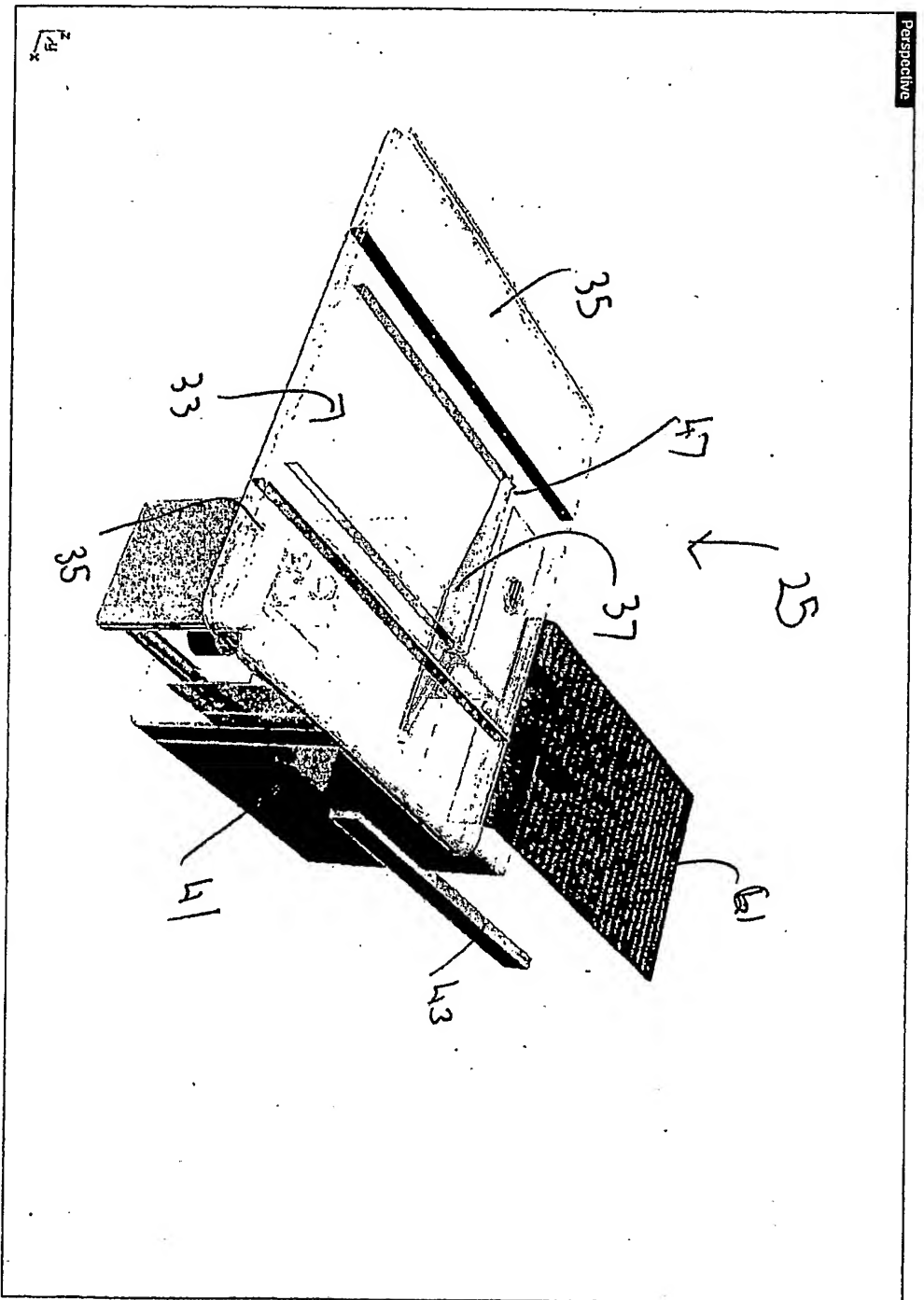


FIGURE 9

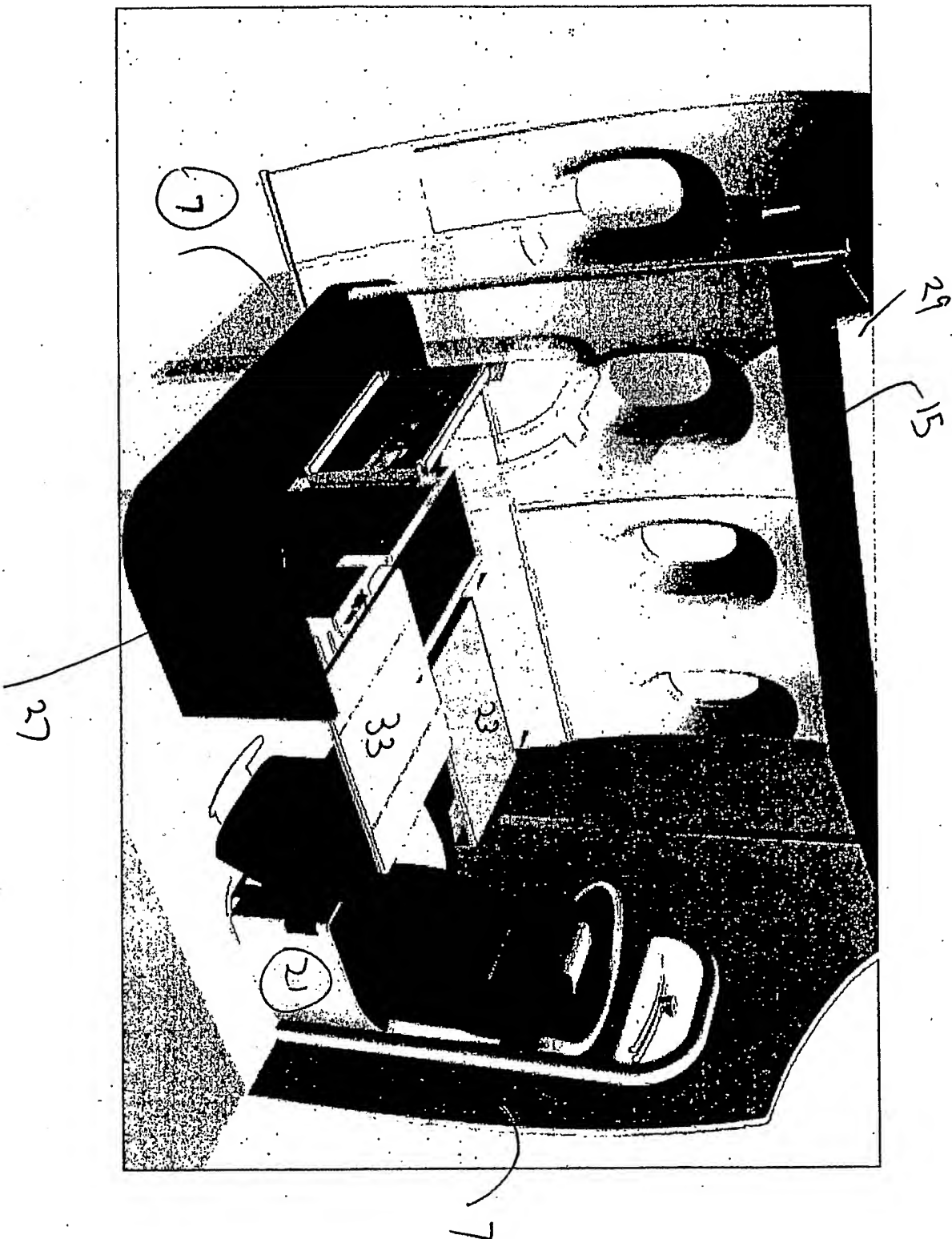


FIGURE 10

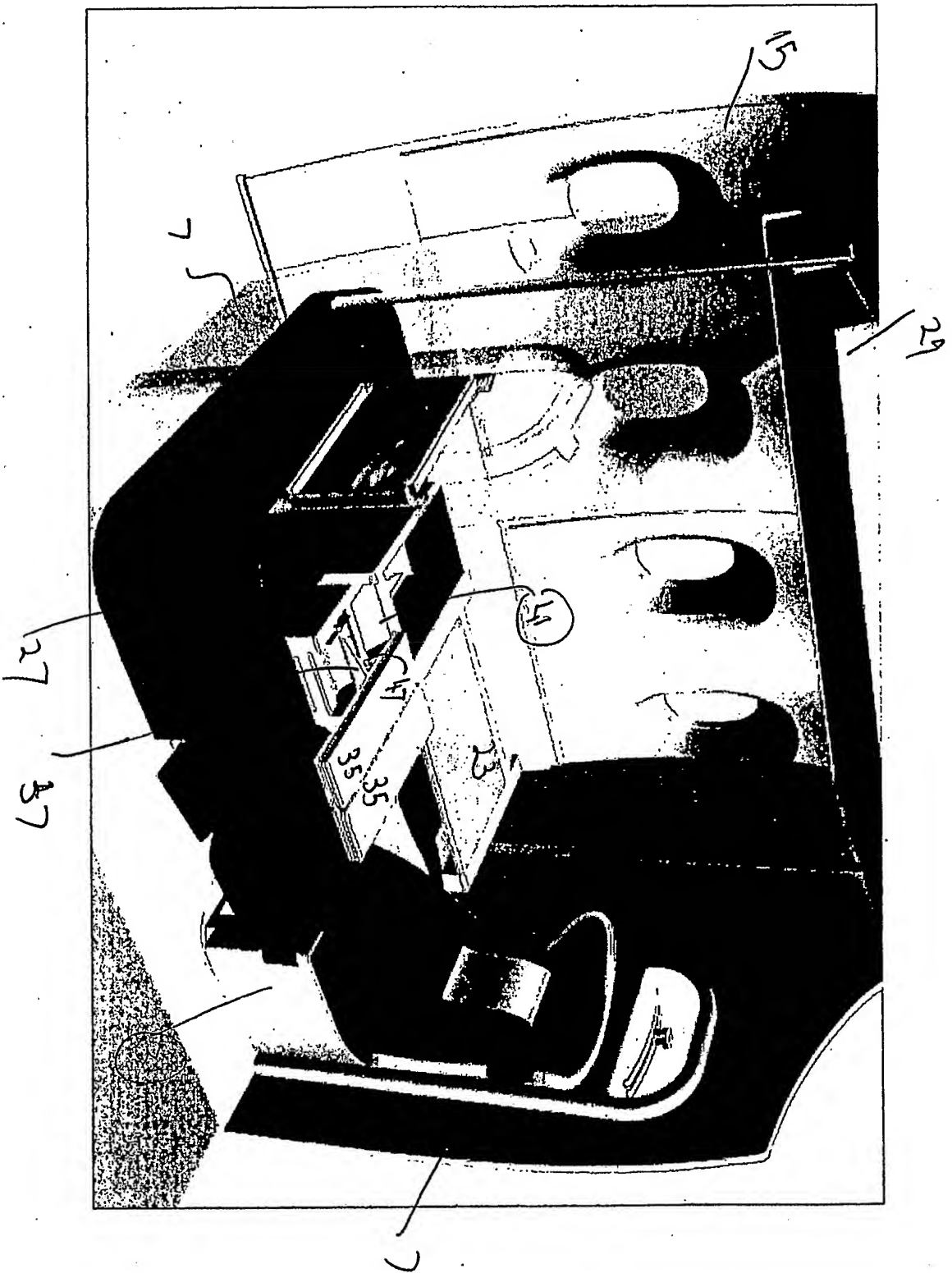
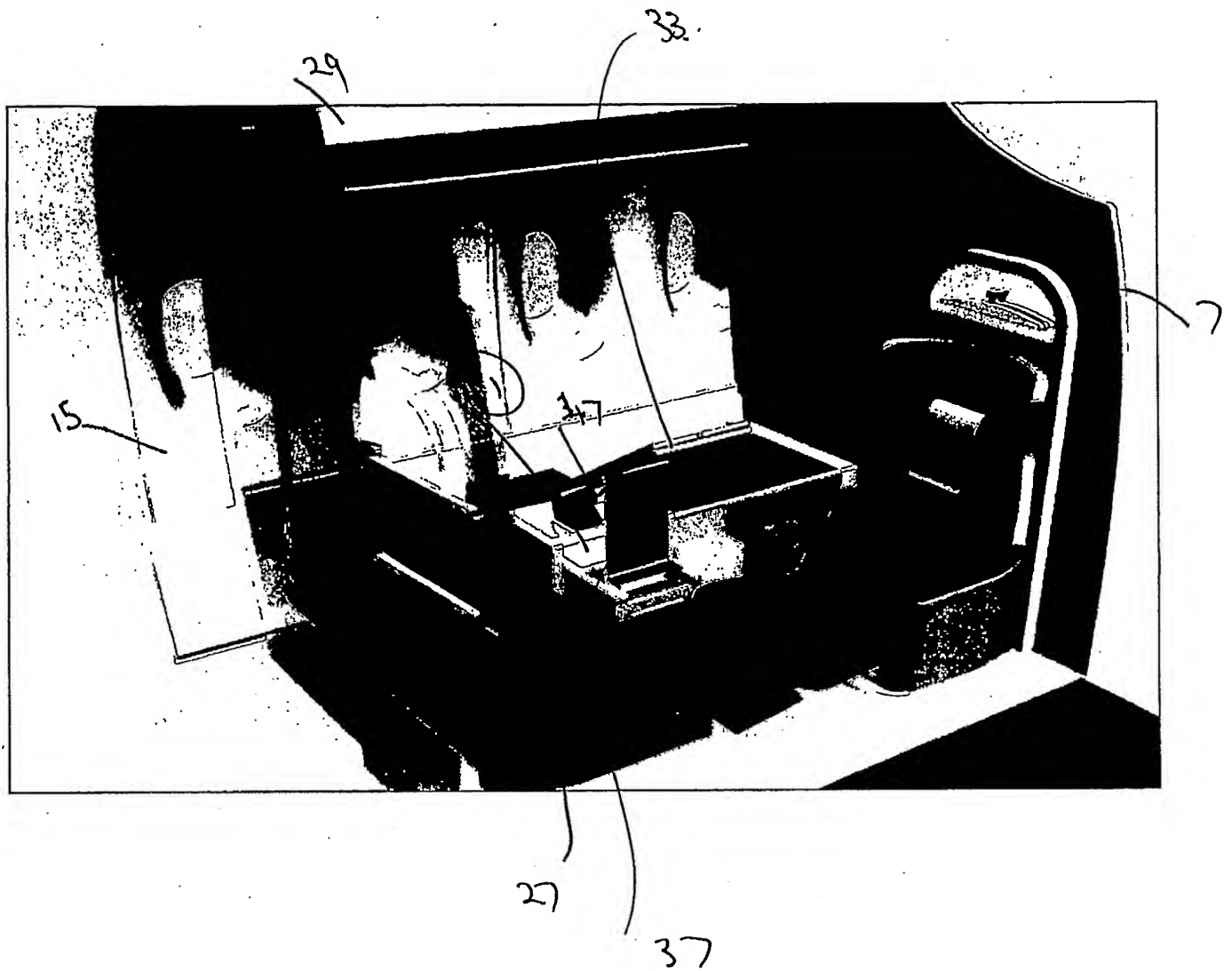


FIGURE 11



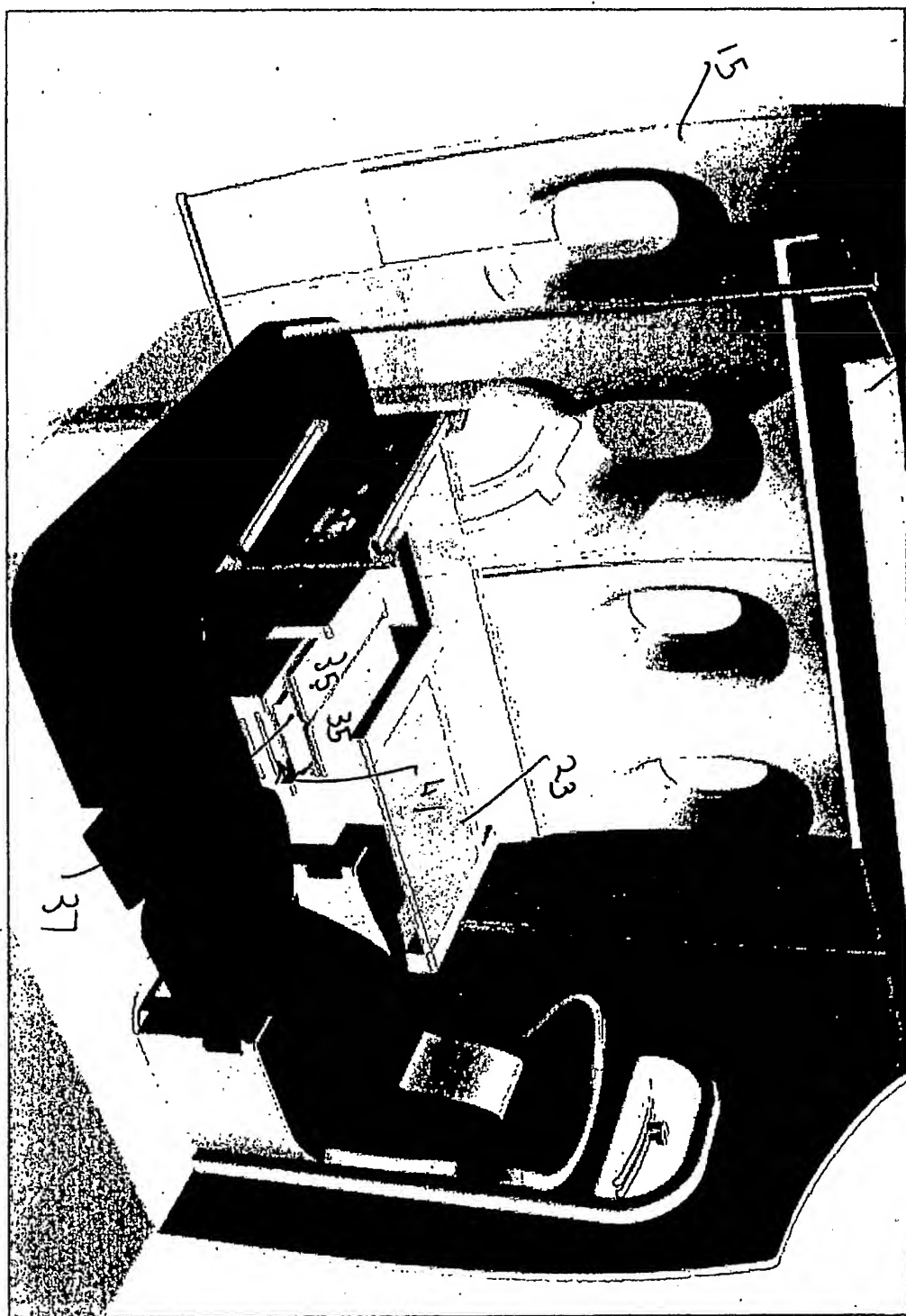
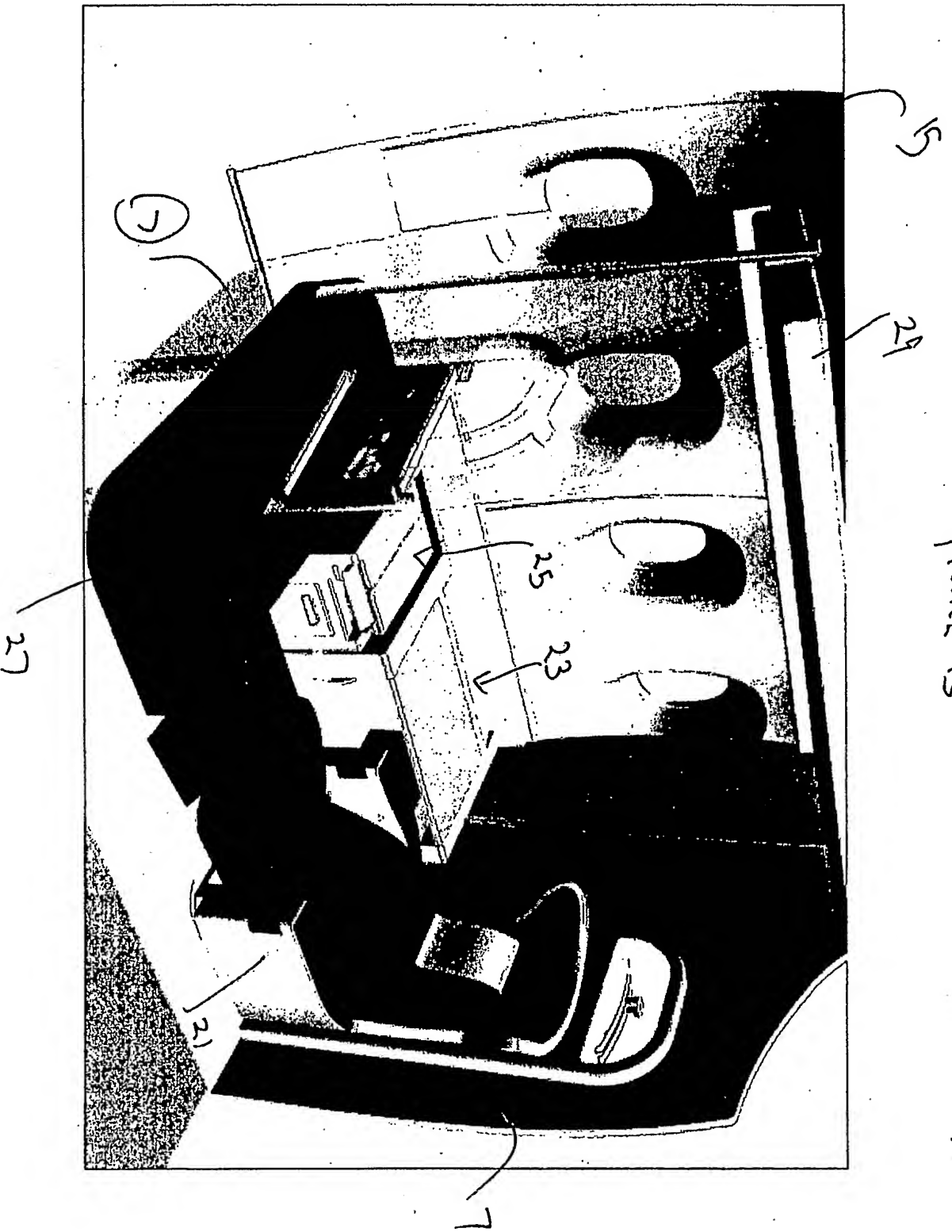


FIGURE 12

FIGURE 13



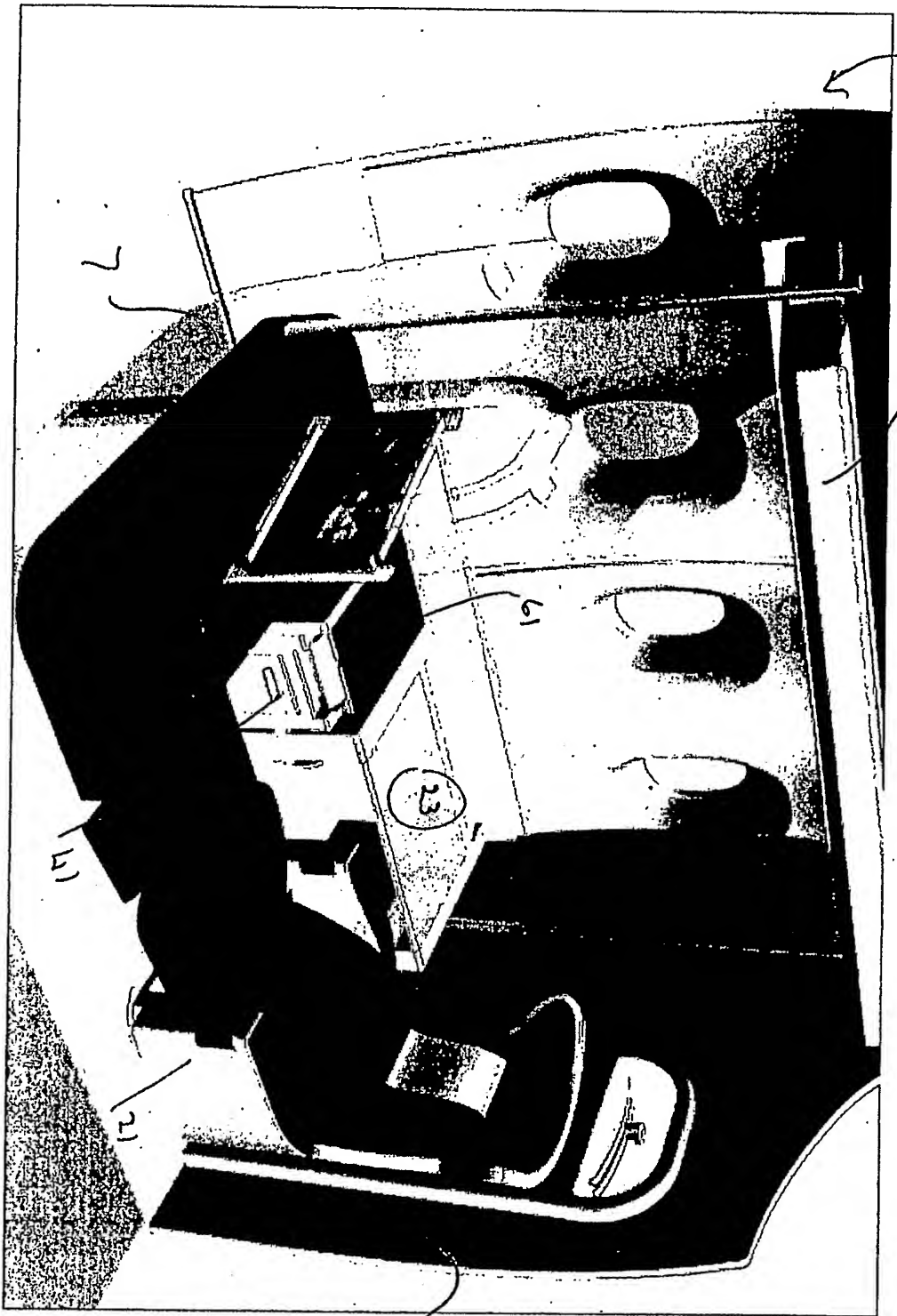


Figure 14

15

29

61

23

141

21

7

FIGURE 15

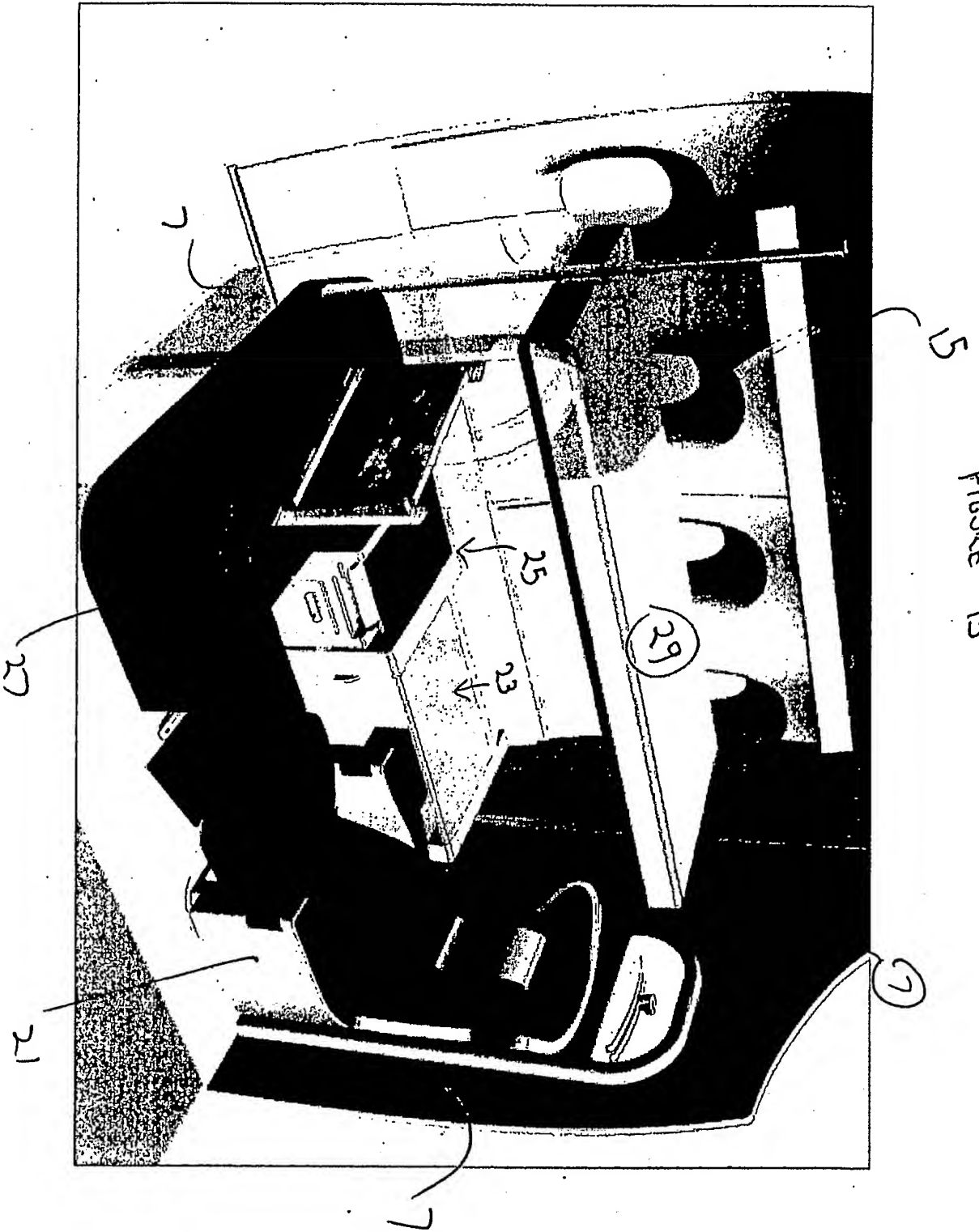


FIGURE 1b

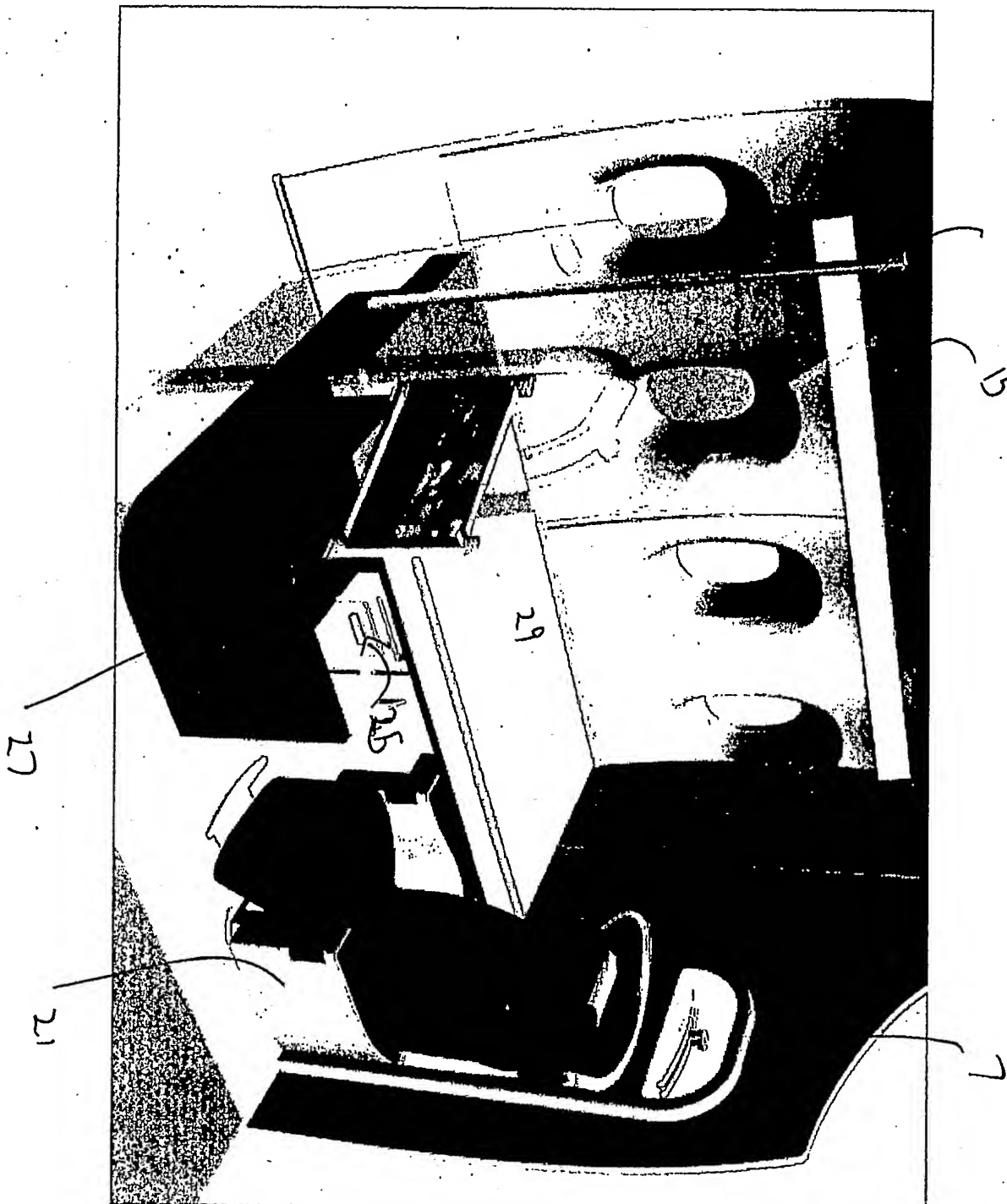


FIGURE 17

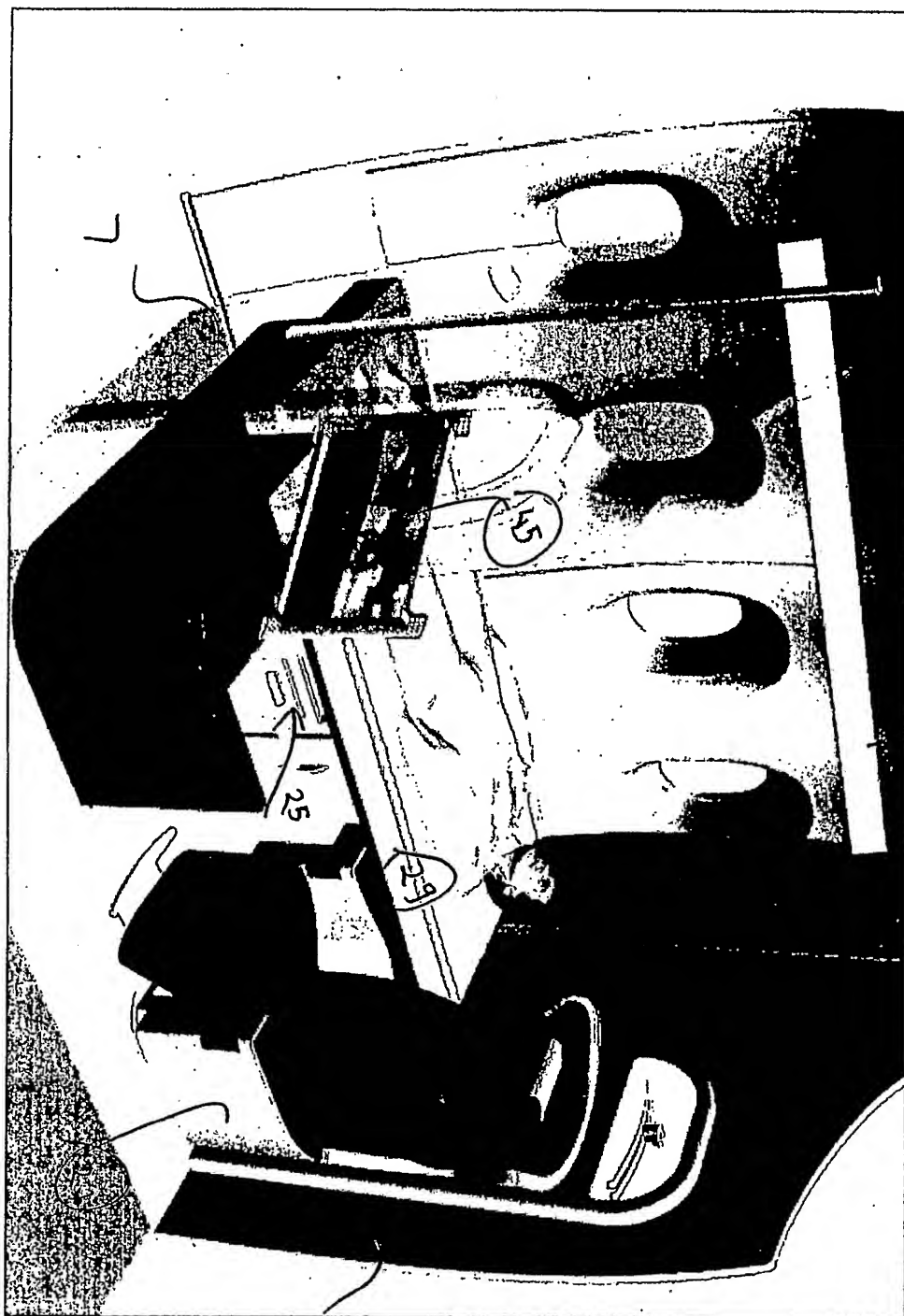
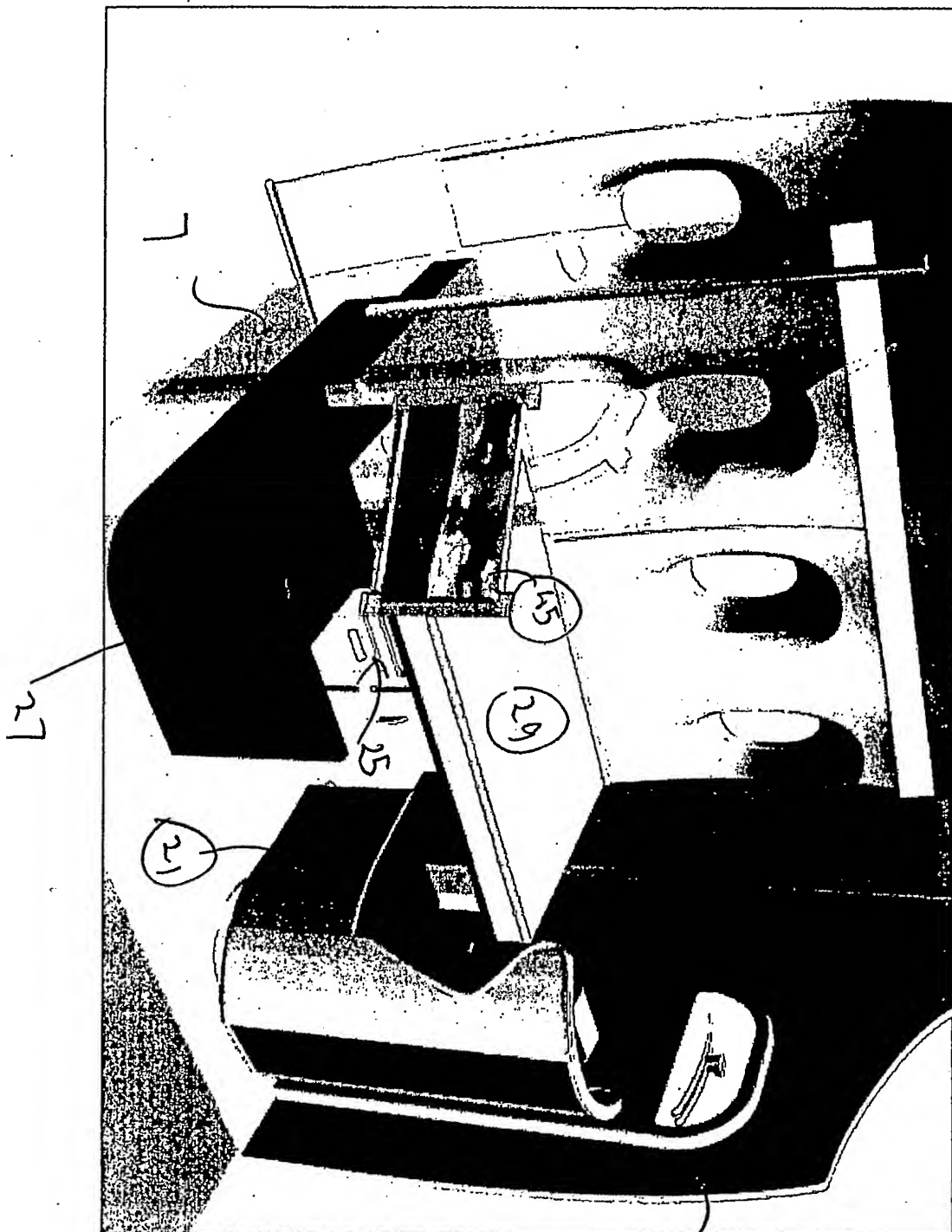


FIGURE 18



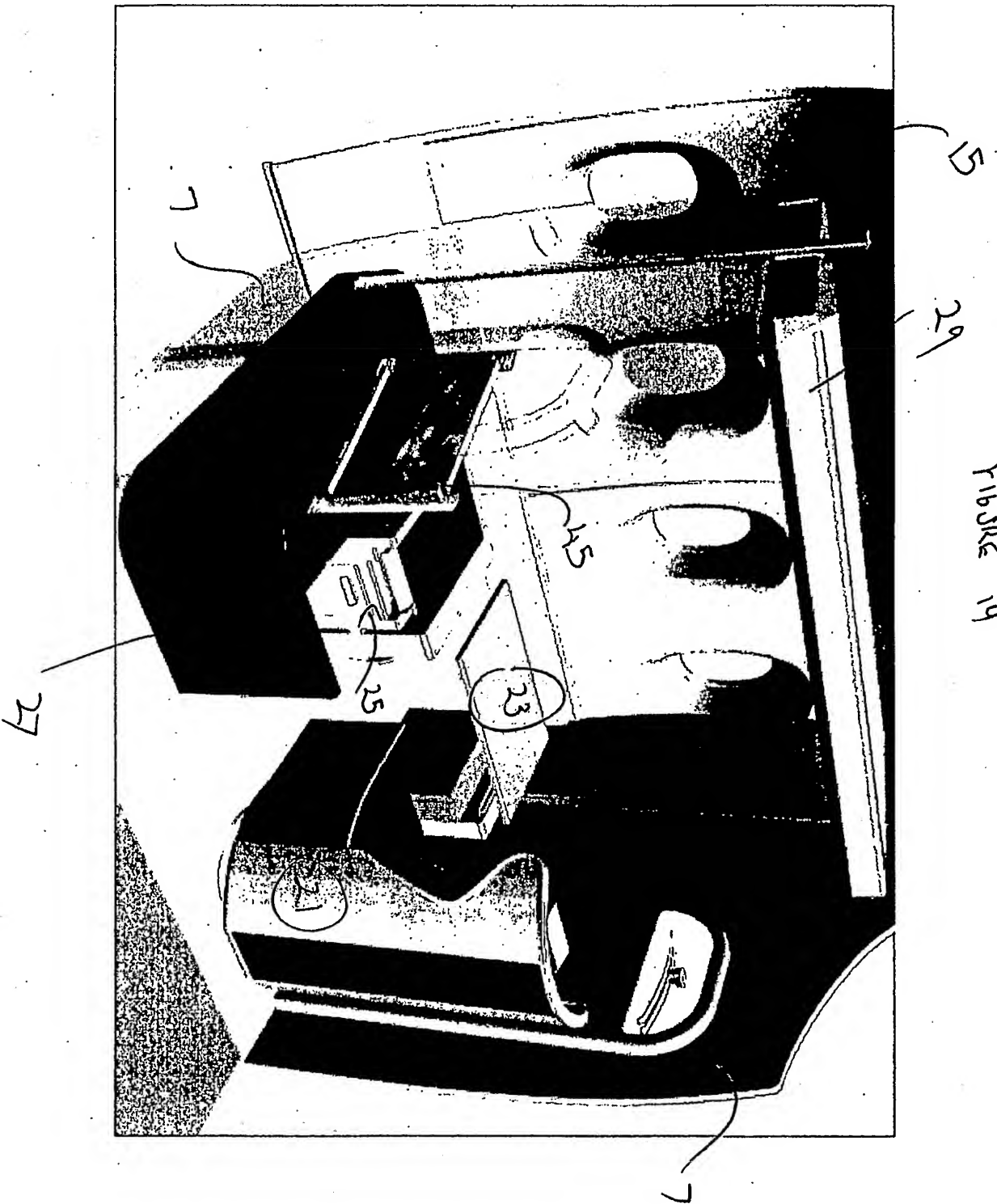


Figure 20

